



(1369)

MAR 16 1994

March 11, 1994

Mr. Richard Spiese  
Vermont ANR/DEC  
Hazardous Materials Management Division  
103 South Main Street/West Building  
Waterbury, Vermont 05671-0404

RE: Initial Investigation of Subsurface Petroleum Contamination at Brochu Citgo Service,  
Hardwick, Vermont (Vermont DEC Site #92-1369)

Dear Mr. Speise:

Please find enclosed the report on the initial Investigation of Subsurface Petroleum Contamination at the above referenced site. Please call if you have any questions or comments.

Sincerely,

Erik C. Sandblom  
Engineer

Enclosure

**REPORT ON THE INITIAL INVESTIGATION  
OF SUBSURFACE PETROLEUM CONTAMINATION**

**MARCH 7, 1994**

**Site Location:**

**BROCHU CITGO SERVICE  
MILL STREET  
HARDWICK, VERMONT  
(VT DEC Site #92-1369)**

**Prepared For:**

**MR. RICHARD BROCHU  
BROCHU CITGO SERVICE  
P.O. BOX 586  
HARDWICK, VERMONT 05843**

**Prepared By:**

***GRIFFIN INTERNATIONAL*  
2B Dorset Lane  
Williston, Vermont 05495  
(802) 879-7708**

Page 1 of 100

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
I. INTRODUCTION	1
II. SITE DESCRIPTION	1
III. GROUNDWATER SAMPLE COLLECTION AND ANALYSIS	2
IV. GROUNDWATER FLOW DETERMINATION	3
V. CONCLUSIONS	3
VI. RECOMMENDATIONS	4

### APPENDICES

- A. Site Location Map
- B. Site Maps
  - 1) Site Map
  - 2) Groundwater Contour Map
- C. Groundwater Quality Summary Data
- D. Groundwater Liquid Level Data
- E. Laboratory Analysis Reports

## **I. INTRODUCTION**

The following report details the initial investigation of subsurface petroleum contamination at Brochu Citgo Service located in downtown Hardwick, Vermont. This investigation has been conducted by Griffin International, Inc. (Griffin) for Brochu Citgo Service. The State of Vermont Department of Environmental Conservation (DEC) requested that this investigation be conducted in a letter from Mr. Richard Spiese of the Vermont DEC to Mr. Richard Brochu dated August 3, 1993.

The work presented here has been conducted in accordance with the first phase of the Griffin Work Plan dated September, 1993 and approved by the DEC on January 13, 1994. The work includes the collection and laboratory analysis of groundwater samples from the existing five monitoring wells at the site. A sample was not collected from the drain pipe outlet into the Lamoille River, north of the site, since it was covered with ice and snow and the river was frozen at the time of sample collection. Also, the Hairport building, across the street from the site, and Merchants bank, located next door to the site, were not able to be screened for volatile organic compound (VOC) vapors because both of the buildings were closed and locked.

## **II. SITE DESCRIPTION**

Brochu Citgo Service is located in the business district of Hardwick, Vermont. It is bordered by the Lamoille River to the north and northeast, an antique store to the east, Mill Street to the south and southwest, and a former bank building to the west and northwest. All buildings in the area are serviced by public water supply and sewer systems.

The Brochu Citgo property is currently used as a gasoline retail and auto service station. Two underground storage tanks (USTs) are located on the property along the northwest side of the building on-site. One of the USTs has a capacity of 6,000 gallons and the other tank has a total capacity of 8,000 gallons, separated into two 4,000 gallon compartments. Both tanks and compartments are used to store gasoline.

In November of 1989, petroleum contamination was detected in soils and groundwater at Brochu Citgo Service during a routine inspection at a UST removal. Based on data collected by Lincoln Applied Geology (LAG) of Bristol, Vermont during the period from early April, 1993 to June, 1993, petroleum contamination continues to exist in both the soils and groundwater at the site. The presence of this contamination in the subsurface is likely due to releases from UST systems that had been located at the site in the past, and from a leak in a check valve discovered in May of 1993 under one of the dispensers of the UST system that is currently in use. All leaks that have been detected in the current system have since been repaired.

Gasoline vapors have been detected in the former Merchant's Bank building, adjacent to Brochu Citgo Service, and the hair salon and video rental building, located across the street from the site. Air quality screening conducted by Aquatec, Inc. in early April of 1993 revealed levels of contaminants in the air in the bank building above acceptable contaminant levels set forth by the

Occupational Safety and Health Administration (OSHA). Gasoline contamination has also been detected in water from a culvert drain on the north edge of the site that discharges into the Lamoille River, based on laboratory analysis of a water sample collected from the drain on May 14, 1993. The vapors detected in the buildings and the contamination detected in the water from the drain pipe may or may not be related to the contamination detected at Brochu Citgo Service.

Based on The State of Vermont Surficial Geologic Map, the soils in this portion of the Lamoille River Valley consist primarily of fluvial sands and fine marine gravels. This has been confirmed by soil boring logs prepared by LAG for monitoring wells installed at the site from May 7, 1993 to May 10, 1993. Much of the soils encountered were also fine sands used as fill material on the property.

### III. GROUNDWATER SAMPLE COLLECTION AND ANALYSIS

On February 3, 1994, samples of the groundwater were collected from monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5. The culvert drain into the Lamoille River to the north of the site was originally planned to be sampled according to the work plan for this investigation, but was not sampled due to heavy snow and ice buildup around the pipe and the frozen conditions of the river. The locations of the wells are displayed on the site map prepared by LAG in Appendix B. All samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), common constituents found in petroleum products, and MTBE, a common gasoline additive, per EPA Method 602 by Endyne, Inc. in Williston, Vermont. Results of the laboratory analysis for those wells sampled on this date are summarized in Appendix D.

According to the results of the laboratory analyses, the groundwater sample collected from MW-4 contained non-detectable levels of contamination. All other groundwater samples analyzed contained contaminants at concentrations above the Vermont Drinking Water Standards. Results of the analysis are summarized in Appendix C along with the results of the analysis performed by Micro Assays of Vermont for the samples collected May 14, 1994. Percent differences in total BTEX and total contamination (BTEX plus MTBE) concentrations from the results of the analyses for the two sample dates are shown below:

Percent Difference in Contamination Levels Detected in Groundwater Samples Collected 5/14/93 and 2/3/94 at Brochu Citgo Service in Hardwick, Vermont		
Sample Location	Total BTEX	Total Contaminants
MW-1	+130%	+135%
MW-2	-36%	-49%
MW-3	-11%	-20%
MW-4	-100%	-100%
MW-5	+80%	+118%
Culvert Drain	N/A	N/A
Total Percentage Difference	+63%	+84%

NOTE: A minus (-) represents a reduction and a plus (+) represents an increase in contaminant levels from the 3/93 to the 2/94 sample date.

All samples were collected according to Griffin's groundwater sampling protocol which complies with industry and state standards. Results from the analyses of the duplicate, trip blank and equipment blank samples indicate that adequate quality assurance and control (QA/QC) were maintained during sample collection and analyses.

#### **IV. GROUNDWATER FLOW DETERMINATION**

Depth to water measurements were taken for each well prior to groundwater sample collection. The groundwater table elevation at each well was then determined relative to an arbitrary datum of 100.00 feet at the top of the well casing for MW-1. From this data, the groundwater contours were interpolated onto the site map and the groundwater direction and gradient determined. From the water level measurements summarized in Appendix D and the groundwater contour map displayed in Appendix B, the calculated groundwater flow at the site for February 3, 1994 was generally to the north, toward the Lamoille River at a gradient of approximately 3.5%. This flow pattern is similar to groundwater flow conditions determined by LAG in their June, 1993 report to the Vermont DEC..

#### **V. CONCLUSIONS**

Based on data collected from Brochu's Citgo Service during an initial site assessment from August, 1993 to February, 1994, Griffin has reached the following conclusions.

- 1) Based on the analysis of groundwater samples collected at the site on February 3, 1994, significant petroleum contamination exists in the subsurface at Brochu Citgo Service in Hardwick, Vermont.
- 2) The contamination levels detected do not exhibit a significant decrease in overall contaminant levels across the site since the last sampling event.
- 3) Petroleum contamination previously detected in the water flowing out of the culvert drain into the Lamoille River on the northern edge of the site is not currently impacting the Lamoille River. Frozen conditions, typical of this time of year, prevent the flow of water from the drain into the River. The contamination previously detected is not known to have originated from Brochu's Citgo Service.

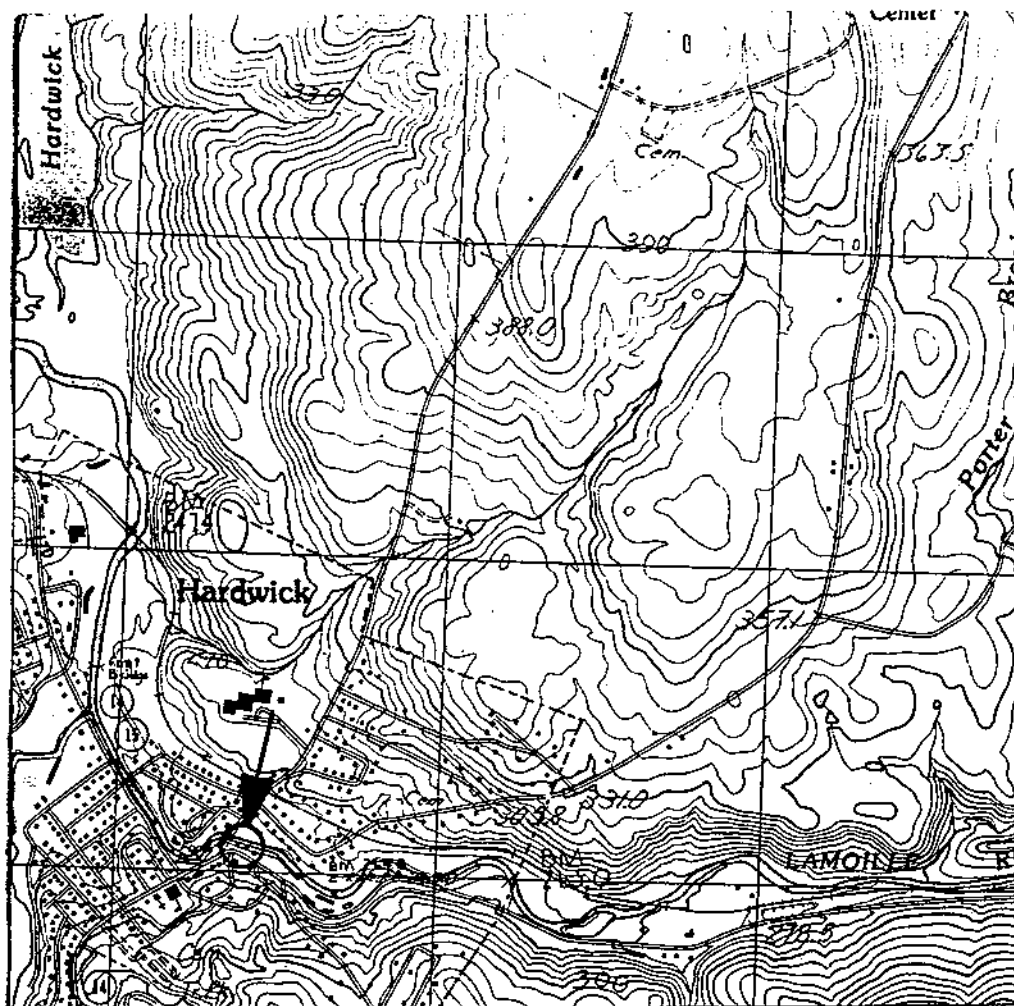
## **V. RECOMMENDATIONS**

Based on the above conclusions, Griffin recommends the following action concerning petroleum contamination at Brochu Citgo Service located in Hardwick, Vermont.

- 1) In accordance with the September, 1993 work plan and cost estimate prepared by Griffin for Brochu Citgo Service, the second phase of work should be completed due to the apparent persistence of petroleum contamination in the monitoring wells currently on-site. This work will include the installation of three additional monitoring wells and the subsequent groundwater sampling and laboratory analysis from all monitoring wells associated with the site.
- 2) In addition to the enactment of the second phase of the Griffin work plan for this site, an attempt should be made again to sample the culvert drain which exits into the Lamoille River. It is likely that, being later in the season, water flow may be observed from the drain pipe. Also, vapor monitoring with a photoionization detector (PID) should be conducted in the former Merchant's Bank building and the Hairport building.

**APPENDIX A**  
**SITE LOCATION MAP**





JOB #: 8934421

SOURCE: USGS CASPIAN LAKE QUADRANGLE



**BROCHO CITGO SERVICE**  
**HARDWICK, VERMONT**  
**SITE LOCATION MAP**

DATE: 3/7/94

DWG #1

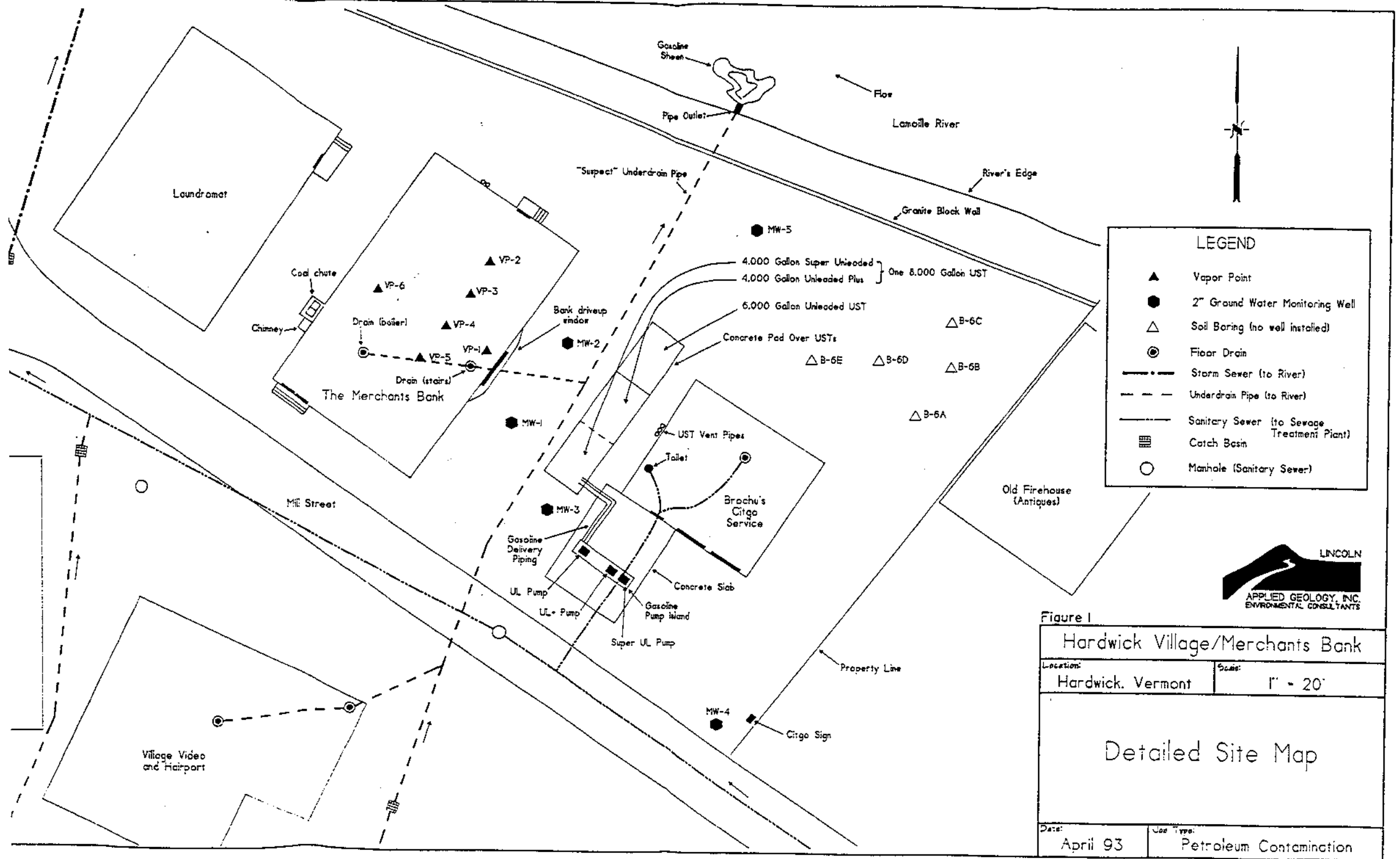
SCALE: 1:24000

DRN: SB

APP: ES

## **APPENDIX B**

### **SITE MAPS**



# LEGEND

- ▲ Vapor Point
- 2" Ground Water Monitoring Well
- △ Soil Boring (no well installed)
- ⊙ Floor Drain
- Storm Sewer (to River)
- - - Underdrain Pipe (to River)
- Sanitary Sewer (to Sewage Treatment Plant)
- ▢ Catch Basin
- Manhole (Sanitary Sewer)



Figure 1

Hardwick Village/Merchants Bank

Location:

Hardwick, Vermont

Scale:

1" = 20'

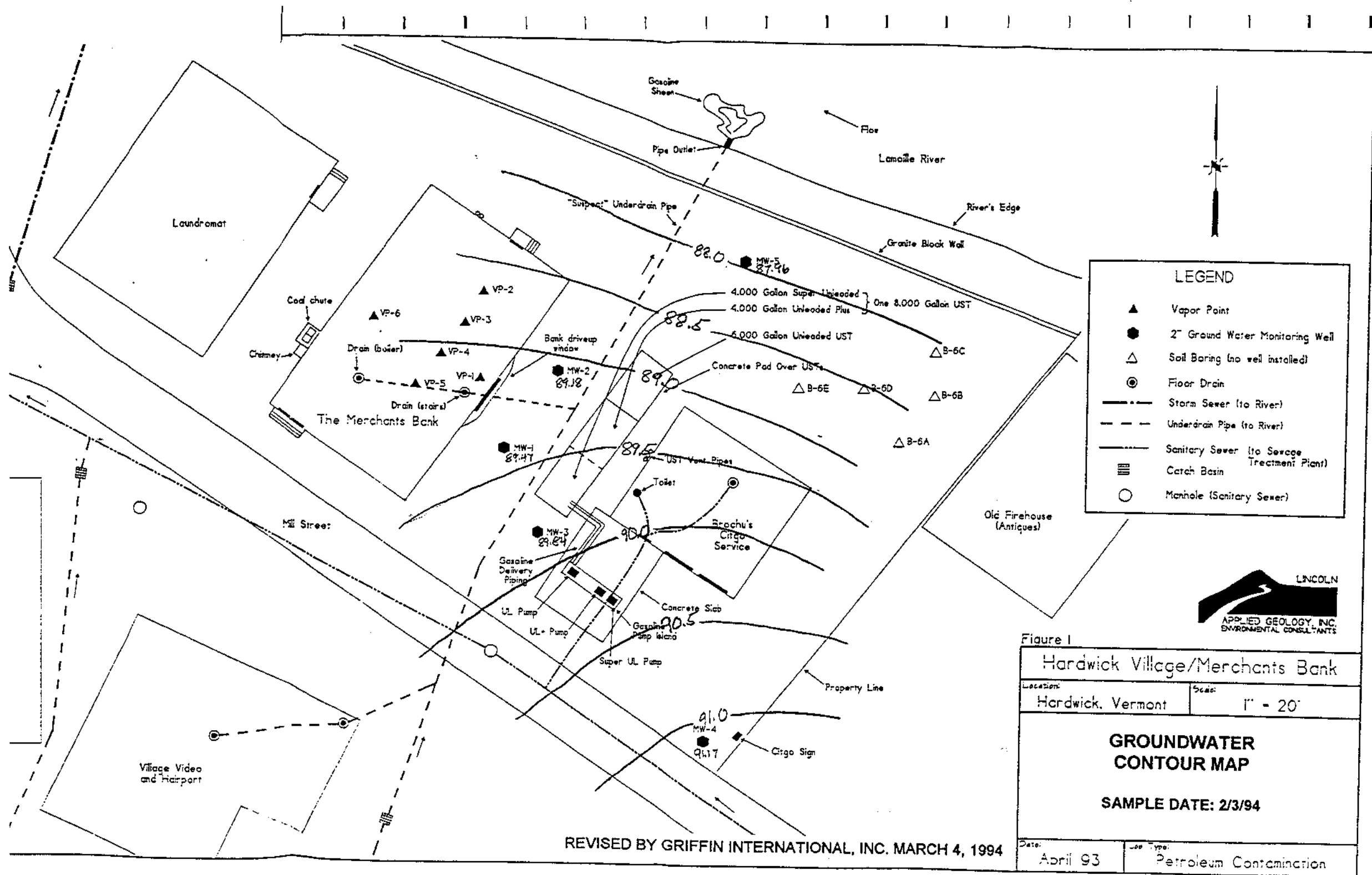
Detailed Site Map

Date:

April 93

Use Type:

Petroleum Contamination



**APPENDIX C**

**GROUNDWATER QUALITY SUMMARY DATA**

**Groundwater Quality Summary**  
**Brochu's Citgo**  
**Hardwick, Vermont**

**Monitoring Well 1 (MW-1)**

PARAMETER	Date of Sample Collection		Vermont Drinking Water Standards
	5/14/93	2/3/94	
Benzene	6.36	29.7	5.0*
Ethylbenzene	29.10	ND	700*
Toluene	5.04	78.6	1000*
Xylenes	20.14	31.4	10000*
Total BTEX	60.64	139.70	-
MTBE	3.49	11.3	40**
BTEX+MTBE	64.13	151.00	-

**Monitoring Well 2 (MW-2)**

PARAMETER	Date of Sample Collection		Vermont Drinking Water Standards
	5/14/93	2/3/94	
Benzene	2,595.	1,390.	5.0*
Ethylbenzene	17,713.	496.	700*
Toluene	1,516.	10,500.	1000*
Xylenes	6,148.	5,570.	10000*
Total BTEX	27,972.	17,956.	-
MTBE	7,398.	TBQ	40**
BTEX+MTBE	35,370.	17,956.	-

**Monitoring Well 3 (MW-3)**

PARAMETER	Date of Sample Collection		Vermont Drinking Water Standards
	3/14/93	2/3/94	
Benzene	4,888.	1,880.	5.0*
Ethylbenzene	39,250.	1,690.	700*
Toluene	2,427.	28,300.	1000*
Xylenes	10,792.	19,200.	10000*
Total BTEX	57,357.	51,070.	-
MTBE	57,948.	86,800.	40**
BTEX+MTBE	115,305.	137,870.	-

**Monitoring Well 4 (MW-4)**

PARAMETER	Date of Sample Collection		Vermont Drinking Water Standards
	3/14/93	2/3/94	
Benzene	1.90	ND	5.0*
Ethylbenzene	19.96	ND	700*
Toluene	3.04	ND	1000*
Xylenes	20.28	ND	10000*
Total BTEX	45.18	ND	-
MTBE	ND	ND	40**
BTEX+MTBE	45.18	ND	-

All values reported in ug/L (ppb)

ND - None Detected

TBQ - Trace below quantitation Limits

\* - EPA Established Maximum Contaminant Level

\*\* - Vermont Health Advisory Level

## Monitoring Well 5 (MW-5)

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	3/14/93	2/3/94		
Benzene	993.	2,920.		5.0*
Ethylbenzene	3,884.	3,340.		700*
Toluene	4,680.	2,810.		1000*
Xylenes	5,187.	17,500.		10000*
Total BTEX	14,744.	26,570.		
MTBE	3,627.	13,500.		40**
BTEX+MTBE	18,371.	40,070.		

## Culvert Drain

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	3/14/93	2/3/94		
Benzene	19.50	No		5.0*
Ethylbenzene	129.40	Sample		700*
Toluene	2.10	Collected		1000*
Xylenes	68.90			10000*
Total BTEX	219.90			
MTBE	34.30			40**
BTEX+MTBE	254.20			

All values reported in ug/L (ppb)

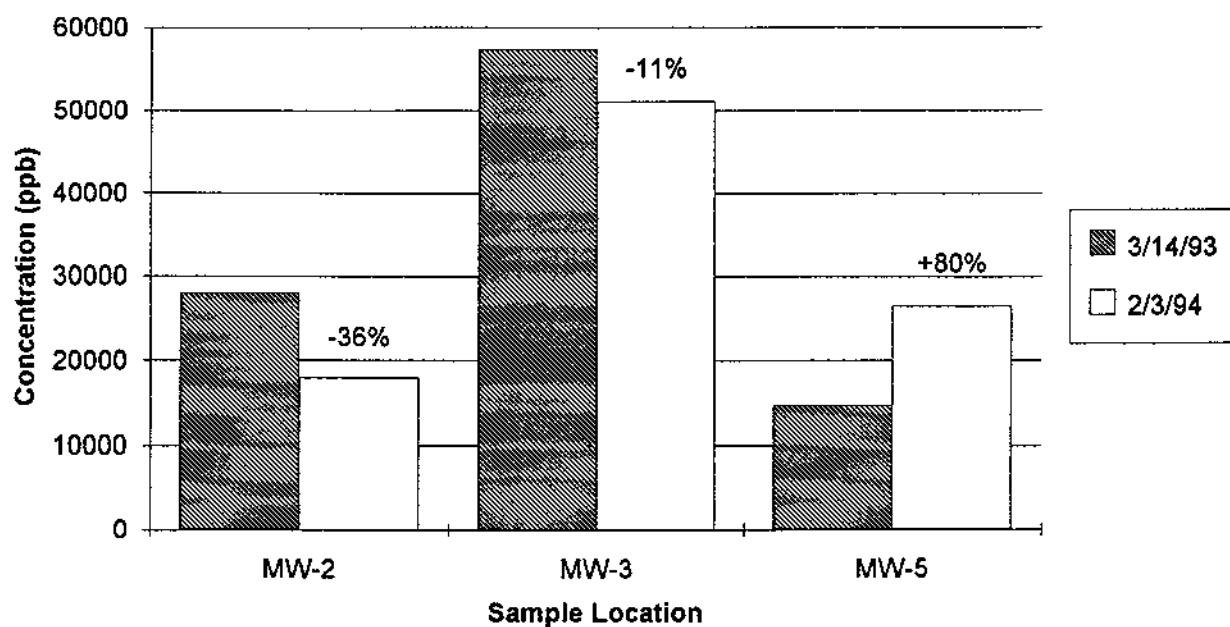
ND - None Detected

TBQ - Trace below quantitation Limits

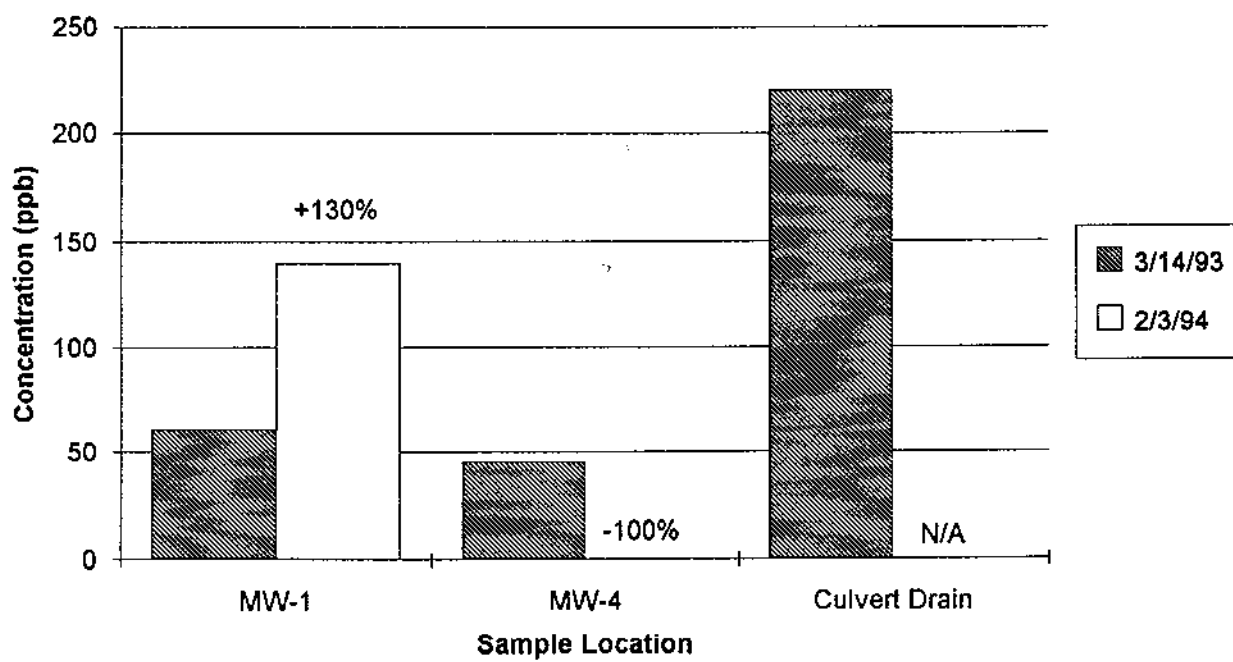
\* - EPA Established Maximum Contaminant Level

\*\* - Vermont Health Advisory Level

### Total BTEX Concentrations



### Total BTEX Concentration





**APPENDIX D**

**GROUNDWATER LIQUID LEVEL DATA**

3/4/94

**Liquid Level Monitoring Data  
Brochu Citgo Service  
Hardwick, Vermont**

**Monitoring Date:  
February 3, 1994**

Well I.D.	Well Depth*	Top of Casing Elevation*	Depth to Product	Depth to Water	Product Thickness	Specific Gravity of Product	Hydro Equivalent	Corrected Depth to Water	Corrected Water Table Elevation
MW-1	15.2	100.00	-	10.53	-	-	-	10.53	89.47
MW-2	13.0	99.53	-	10.35	-	-	-	10.35	89.18
MW-3	12.4	99.60	-	9.76	-	-	-	9.76	89.84
MW-4	16.5	100.18	-	9.01	-	-	-	9.01	91.17
MW-5	14.3	97.60	-	9.64	-	-	-	9.64	87.96

Notes:

All values reported in feet.

\*Taken from data collected by Lincoln Applied Geology and presented in letter to VT DEC dated June 10, 1993.

**APPENDIX E**

**LABORATORY ANALYSIS REPORTS**



**ENDYNE, INC.**

RECEIVED FEB 21 1994

Laboratory Services

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,261 - 56,268

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated samples were preserved with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.  
Laboratory Director

enclosures



**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 4, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,261  
STATION: MW-1  
TIME SAMPLED: 11:15  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	29.7
Chlorobenzene	1	ND <sup>1</sup>
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	78.6
Xylenes	1	31.4
MTBE	10	11.3

Bromobenzene Surrogate Recovery: 115%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 4

**NOTES:**

1 None detected



**ENDYNE, INC.**

**Laboratory Services**

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Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,262  
STATION: MW-2  
TIME SAMPLED: 11:00  
SAMPLER: J. Bernhard

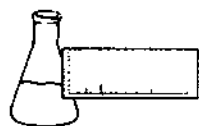
<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	200	1,390.
Chlorobenzene	200	ND <sup>2</sup>
1,2-Dichlorobenzene	200	ND
1,3-Dichlorobenzene	200	ND
1,4-Dichlorobenzene	200	ND
Ethylbenzene	200	496.
Toluene	200	10,500.
Xylenes	200	5,570.
MTBE	2000	TBQ <sup>3</sup>

Bromobenzene Surrogate Recovery: 106%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 5

**NOTES:**

- 1 Detection limit raised due to high levels of contaminants. Sample run at 0.5% dilution.
- 2 None detected
- 3 Trace below quantitation limit



**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,263  
STATION: MW-3  
TIME SAMPLED: 11:40  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	500	1,880.
Chlorobenzene	500	ND <sup>2</sup>
1,2-Dichlorobenzene	500	ND
1,3-Dichlorobenzene	500	ND
1,4-Dichlorobenzene	500	ND
Ethylbenzene	500	1,690.
Toluene	500	28,300.
Xylenes	500	19,200.
MTBE	5000	86,800.

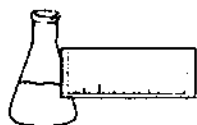
Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 3

**NOTES:**

1 Detection limit raised due to high levels of contaminants. Sample run at 0.2% dilution.

2 None detected



**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 16, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,264  
STATION: MW-4  
TIME SAMPLED: 10:40  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND <sup>1</sup>
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

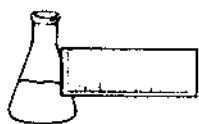
Bromobenzene Surrogate Recovery: 109%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

**NOTES:**

1 None detected





**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 8, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,265  
STATION: MW-5  
TIME SAMPLED: 10:20  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	100	2,920.
Chlorobenzene	100	ND <sup>2</sup>
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	3,340.
Toluene	100	2,810.
Xylenes	100	17,500.
MTBE	1000	13,500.

Bromobenzene Surrogate Recovery: 113%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

**NOTES:**

1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.

2 None detected



**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,266  
STATION: Trip Blank  
TIME SAMPLED: 10:05  
SAMPLER: J. Bernhard

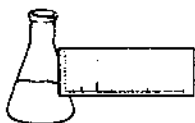
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND <sup>1</sup>
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 107%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

**NOTES:**

1 None detected



**ENDYNE, INC.**

**Laboratory Services**

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FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,267  
STATION: Equipment Blank  
TIME SAMPLED: 11:55  
SAMPLER: J. Bernhard

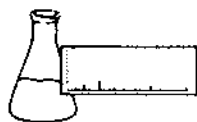
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND <sup>1</sup>
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 106%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

**NOTES:**

1 None detected



**ENDYNE, INC.**

**Laboratory Services**

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Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

**LABORATORY REPORT**

**EPA METHOD 602--PURGEABLE AROMATICS**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,268  
STATION: Duplicate (MW-3)  
TIME SAMPLED: 11:40  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	500	1,800.
Chlorobenzene	500	ND <sup>2</sup>
1,2-Dichlorobenzene	500	ND
1,3-Dichlorobenzene	500	ND
1,4-Dichlorobenzene	500	ND
Ethylbenzene	500	1,580.
Toluene	500	27,200.
Xylenes	500	18,100.
MTBE	5000	83,300.

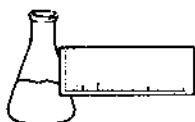
Bromobenzene Surrogate Recovery: 106%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 3

**NOTES:**

1 Detection limit raised due to high levels of contaminants. Sample run at 0.2% dilution.

2 None detected



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**EPA METHOD 602 LABORATORY REPORT**

**MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA**

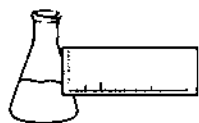
CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 4, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,261  
STATION: MW-1  
TIME SAMPLED: 11:15  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Sample(ug/L)</u>	<u>Spike(ug/L)</u>	<u>Dup1(ug/L)</u>	<u>Dup2(ug/L)</u>	<u>Avg % Rec</u>
Benzene	29.7	10	42.8	40.5	120%
Toluene	78.6	10	91.3	85.8	100%
Ethylbenzene	ND <sup>1</sup>	10	13.1	13.0	131%
Xylenes	31.4	30	69.9	67.6	125%

**NOTES:**

1 None detected



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**EPA METHOD 602 LABORATORY REPORT**

**MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA**

CLIENT: Griffin International  
PROJECT NAME: Brochu's Citgo  
REPORT DATE: February 15, 1994  
DATE SAMPLED: February 3, 1994  
DATE RECEIVED: February 3, 1994  
ANALYSIS DATE: February 7, 1994

PROJECT CODE: GIBC1786  
REF.#: 56,264  
STATION: MW-4  
TIME SAMPLED: 10:40  
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Sample(ug/L)</u>	<u>Spike(ug/L)</u>	<u>Dup1(ug/L)</u>	<u>Dup2(ug/L)</u>	<u>Avg % Rec</u>
Benzene	ND <sup>1</sup>	10	10.3	10.5	104%
Toluene	ND	10	9.7	9.6	97%
Ethylbenzene	ND	10	9.0	9.0	90%
Xylenes	ND	30	27.4	27.3	91%

**NOTES:**

1 None detected

[illegible]